

Claims

1. An electromagnetic frictionally engaged clutch to be arranged within a drive train connecting a drive motor and a vehicle door or a vehicle flap, having the following features:
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- a) the clutch (1; 20) comprises a rotor part (4) which is provided with a friction lining (2) and is firmly connected to a first shaft (3) so as to rotate with it and, on its side facing away from the friction lining (2), an electric coil (6) is arranged, and an armature disk (10) which is firmly connected to a second shaft (9) so as to rotate with it but can be displaced axially;
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- b) arranged on the rotor part (4) in addition to the electric coil (6) is at least one permanent magnet (15), so that when the coil (6) is not energized, the armature disk (10) is pressed against the friction lining (2) of the rotor part (4) with a force which is high enough for the vehicle door or vehicle flap to remain securely in the respective position assumed when the clutch (1; 20) is disengaged and, during subsequent manual operation of the vehicle door or vehicle flap, the frictional connection between armature disk (10) and friction lining (2) can be overcome.
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2. The clutch as claimed in claim 1, characterized in that the armature disk (10) can be acted on in the axial direction by at least one resilient element (21) in such a way that, when the coil (6) is not energized, on account of the permanent magnet (15) and the resilient element (21) together, the armature disk (10) is pressed against the friction
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- lining (2) of the rotor part (4) with a force which is high enough for the vehicle door or vehicle flap to remain securely in the respective position assumed when the clutch (1; 20) is disengaged and, during subsequent manual operation of the vehicle door or vehicle flap, the frictional connection between armature disk (10) and friction lining (2) can be overcome.
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- 10 3. The clutch as claimed in claim 2, characterized in that the resilient element (21) is a compression spring, a disk spring, a corrugated disk or a rubber buffer.
- 15 4. The clutch as claimed in claim 1 or 2, characterized in that the second shaft (9) is firmly connected on the outside to an armature disk carrier (11) so as to rotate with it, the latter comprising axial guide parts (12) which engage in corresponding groove-like recesses (13) in the armature disk (10).
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5. The clutch as claimed in claim 4, characterized in that the second shaft (9) or the armature disk carrier (11) contains at least one open blind drilled hole (22) on the side facing the armature disk (10) in order to accommodate the compression spring (21).
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- 30 6. The clutch as claimed in one of claims 1 to 5, characterized in that, on its side facing away from the friction lining (2), the rotor part (4) has a recess (5) in which the coil (6) is at least partly arranged.
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7. The clutch as claimed in one of claims 1 to 6, characterized in that the coil (6) is mounted fixed to the housing.

8. The clutch as claimed in one of claims 1 to 7, characterized in that, on its side facing the rotor part (4), the armature disk carrier (11) has a sealing lip (14) which extends over the entire circumference and covers the friction lining (2) of the rotor part (4) completely.
9. A method for operating the clutch as claimed in one of claims 1 to 8, characterized in that, in order to engage the clutch (1; 20), the electric coil (6) has applied to it a current which causes a magnetic field oriented in the same direction as the magnetic field of the permanent magnet (15), so that the armature disk (10) is pressed firmly against the friction lining (2) of the rotor part (4), and in that, in order to disengage the clutch (1; 20), the electric coil (6) has applied to it a current which produces a magnetic field oriented in the opposite direction to the magnetic field of the permanent magnet (15), so that the armature disk (10) is not pressed or pressed only loosely against the friction lining (2) of the rotor part (4).
10. The method as claimed in claim 9, characterized in that the electric coil (6) has a current applied to it which has a value dependent on the respective position of the vehicle door or vehicle flap.